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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/998,639

12/03/2001

Shu Hotta

HOTTA-2A

7639

7590

03/31/2004

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT

PAPER NUMBER

1774

DATE MAILED: 03/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/998,639

Applicant(s)

HOTTA ET AL.

Examiner

Marie R. Yamnitzky

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1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003 and 15 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. This Office action is in response to applicant's amendment filed January 15, 2004, which amends claim 23 and adds claim 24, and is in response to applicant's arguments filed October 31, 2003.

Claims 23 and 24 are pending.

2. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The preamble of claim 23 recites "A molecular compound" but the last two lines refer to the molecular compound as sandwiched between a pair of electrodes. It is not clear if the claim is drawn to a compound with the language regarding the electrodes referring to an intended use of the compound, or to a device comprising a compound (or layer comprising a compound) sandwiched between a pair of electrodes. If the claim is intended to be drawn to a device comprising a pair of electrodes and the compound, rather than to the compound *per se*, the preamble needs to be amended.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claim 23 is rejected under 35 U.S.C. 102(b) as being anticipated by Sakon et al. (US 5,077,142).

Sakon et al. anticipate a compound having the molecular structure set forth in present claim 23 wherein each of m1, m2 and n is 1, and each of R₁ and R₂ is hydrogen. See the formula at column 102, lines 40-45. Sakon et al. also anticipate a compound having the molecular structure set forth in present claim 23 wherein n is 1, each of m1 and m2 is 2, and each of R₁ and R₂ is hydrogen because one of ordinary skill in the art at the time of the invention could have at once envisaged this compound based on Sakon's disclosure that Ar of formula (I) as set forth in claim 1 of the patent can be biphenyl instead of phenyl.

Sakon et al. also anticipate a device comprising a pair of electrodes and, sandwiched between the electrodes, a layer comprising a compound having the molecular structure set forth in present claim 23. The formula at c. 102, l. 40-45 represents a compound that is part of a Markush group of compounds for an organic compound layer sandwiched between an anode and a cathode for Sakon's claimed electroluminescent device.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 23 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nobutoki et al. in *J. Phys. Chem.*, Vol. 100, No. 16, 1996, pp. 6451-6455.

Nobutoki et al. anticipate compounds having the molecular structure set forth in present claim 23 wherein (a) each of m1, m2 and n is 1, and each of R₁ and R₂ is hydrogen, (b) each of m1, m2 and n is 2, and each of R₁ and R₂ is hydrogen, (c) each of m1, m2 and n is 3, and each of R₁ and R₂ is hydrogen, and (d) each of m1, m2 and n is 4, and each of R₁ and R₂ is hydrogen. See the whole article, especially the paragraph bridging the two columns on page 6451 and Figures 1 and 3-8.

Nobutoki et al. anticipate the subject matter of present claim 23 if claim 23 is drawn to a compound and the language regarding the electrodes refers to an intended use of the compound. The electrodes place no limitation on the compound *per se*.

In the alternative, if claim 23 is drawn to a device comprising the compound (or layer comprising the compound) sandwiched between a pair of electrodes, claim 23 is obvious over Nobutoki et al. given Nobutoki's suggestion of using the compounds as organic semiconductors and the suggestion that the compounds would be useful in light-emitting diodes (e.g. see the first paragraph of the Introduction). It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to sandwich one of Nobutoki's compounds between a pair of electrodes in order to provide, for example, a light-emitting diode.

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7. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobutoki et al. in *J. Phys. Chem.*, Vol. 100, No. 16, 1996, pp. 6451-6455, in view of Hotta, Chapter 8 "Molecular Conductive Materials..." in *Handbook of Organic Conductive Molecules Polymers: Vol. 2*, (especially pages 359-363), © 1997 .

Nobutoki et al. anticipate compounds having the molecular structure set forth in present claim 23 wherein (a) each of m_1 , m_2 and n is 1, and each of R_1 and R_2 is hydrogen, (b) each of m_1 , m_2 and n is 2, and each of R_1 and R_2 is hydrogen, (c) each of m_1 , m_2 and n is 3, and each of R_1 and R_2 is hydrogen, and (d) each of m_1 , m_2 and n is 4, and each of R_1 and R_2 is hydrogen.

Nobutoki et al. anticipate compounds having the molecular structure set forth in present claim 24 wherein (a) each of m_1 , m_2 and n is 2, and each of R_1 and R_2 is hydrogen and (b) each of m_1 , m_2 and n is 3, and each of R_1 and R_2 is hydrogen.

See the whole article by Nobutoki et al., especially the paragraph bridging the two columns on page 6451 and Figures 1 and 3-8.

Nobutoki et al. do not disclose an organic electroluminescent element having one of the compounds in a luminous layer sandwiched between a pair of electrodes. However, Nobutoki et al. suggest using the compounds as organic semiconductors and suggest that the compounds would be useful in light-emitting diodes (e.g. see the first paragraph of the Introduction).

Hotta discloses the use of organic semiconductors comprising thiophene units as light-emitting compounds in a light-emitting diode. The diode comprises a pair of electrodes and, sandwiched between the pair of electrodes, a luminous layer comprising an organic semiconductor comprising thiophene units. For example, see pages 359-363. It would have

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been obvious to one of ordinary skill in the art at the time of the invention, having knowledge of Hotta's disclosed light-emitting diode structure, to utilize one of Nobutoki's compounds in a luminous layer between a pair of electrodes in order to a light-emitting diode as suggested by Nobutoki et al.

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claim 23 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 6,355,365 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because a compound as claimed in present claim 23 is a component of the luminous material claimed in patent claim 1; and the present claimed compound wherein n is 4 or more is a component of the organic electroluminescence element of patent claims 2 and 3. In patent claims 2 and 3, the compound is sandwiched between a pair of electrodes.

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The election of species requirement set forth in the parent application does not preclude this rejection because present claim 23 reads on the species that was elected in the parent application.

10. Applicant's arguments filed October 31, 2003 have been fully considered but they are not persuasive as to the patentability of the present claims. Applicant's arguments are believed to be fully addressed in the rejections as set forth in this Office action.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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12. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes.
(Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
March 25, 2004



MARIE YAMNITZKY
PRIMARY EXAMINER

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